

NPRST



Navy Personnel Research, Studies, and Technology
5720 Integrity Drive • Millington, Tennessee 38055-1000 • www.nprst.navy.mil

research at work

NPRST-TN-11-2

November 2010

Minorities and Women in Naval Aviation Training: A Look Back at a 1997 Study

**Zannette A. Uriell
Paul Rosenfeld**



Approved for public release; distribution is unlimited.

NPRST-TN-11-2
February 2011

Minorities and Women in Naval Aviation Training: A Look Back at a 1997 Study

Zannette A. Uriell
Paul Rosenfeld

Reviewed, Approved, and Released by
David M. Cashbaugh
Director

Approved for public release; distribution is unlimited.

Navy Personnel Research, Studies, and Technology (NPRST)
Bureau of Naval Personnel (BUPERS)
5720 Integrity Drive
Millington, TN 38055-1000
www.nprst.navy.mil

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 02-28-2011		2. REPORT TYPE Technical Note		3. DATES COVERED (From - To) January 1997 to December 1997	
4. TITLE AND SUBTITLE Minorities and Women in Naval Aviation Training: A Look Back at a 1997 Study				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Zannette A. Uriell Paul Rosenfeld				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) AND ADDRESS(ES) Navy Personnel Research, Studies, and Technology (NPRST/BUPERS-1) Bureau of Naval Personnel 5720 Integrity Drive Millington, TN 38055-1000				8. PERFORMING ORGANIZATION REPORT NUMBER NPRST-TN-11-2	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Navy Personnel Research, Studies, and Technology (NPRST/BUPERS-1) Bureau of Naval Personnel 5720 Integrity Drive Millington, TN 38055-1000				10. SPONSOR/MONITOR'S ACRONYM(S) NPRST/BUPERS-1	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) NPRST-TN-11-2	
12. DISTRIBUTION / AVAILABILITY STATEMENT A - Approved for public release; distribution is unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT In 1997, Navy leadership expressed an interest in understanding what barriers were faced by minority and women aviators and what organizational factors might lead to success in aviation training. A historical review was done of past and recent research, and interviews and focus groups were conducted of students, trainers, and leadership in the aviation training community. Several key findings are discussed regarding that 1997 effort, including that prior exposure to aviation helps in the training process, that grading is perceived as too subjective, and that discrimination and tokenism are concerns in aviation. Recommendations include providing flight experience early and creating written materials that are deemed useful to survive aviation training, increasing the number of minorities and black in flight instructor positions (ensuring that flight instructor is not seen as a career ending position), and making grading systems more subjective.					
15. SUBJECT TERMS Women, minorities, aviation training, discrimination					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNLIMITED	83	Genni Arledge (include area code) 901-874-2115 (DSN 882)

Foreword

In 1997, Navy leadership expressed interest in determining reasons for low representation of minorities and women in the aviation officer communities. A study was conducted to assess what barriers were faced by minorities and women, and what organizational factors might have existed that influenced the success of minorities and women in aviation training. In addition to examining literature available at the time, interviews and focus groups were conducted with those involved in aviation training, including the students and their trainers as well as leadership at the aviation training commands.

While this report was written a number of years ago as an unpublished management report, there has been recent interest in the unpublished results. The decision was made to publish the results so that they may become part of the literature for future generations. However, the report's value is primarily for historical purposes and should not be viewed as a current reflection on these issues in Naval aviation. Terms for racial identification (e.g., "Black," "Hispanic," "Asian") that were used at the time of initial authoring are included in this document and are not to imply a preference for this term over others that may be used at present (e.g., "African-American," "Hispanic-American," "Asian-American").

While the report has remained unpublished all these years, the briefing that went to Navy leadership in 1997 had an impact that led to changes, according to feedback the authors received in December 2009 from Naval Aviation training personnel. They noted that the subjective grading for Navy at CNATRA vs. the Air Force's objective grading, discussed in this report, is no longer an issue. The Navy adopted the Air Force objective grading system a number of years ago and it continues to be used.

The authors thank the student aviators, aviation trainers, and training command leaders who spoke so candidly with them. The authors also thank Ms. Amy Culbertson for her assistance.

DAVID M. CASHBAUGH
Director

Contents

Background.....	1
Study Approach.....	2
Historical Review	3
Navy Aeronautics and Medical Research Laboratory Studies of Aviation Selection Test Scores and Performance for Minorities	3
Minority Flight Attrition/Recruiting Working Group Minutes.....	4
Navy Inspector General Investigation of Minority Attrition from Aviation Training...	4
Johns Hopkins Evaluation of Racial Issues in Naval Aviation	5
Naval Postgraduate School Survey of Flight Student and Instructor Perceptions.....	6
PERS-61 Survey of Minority Aviators	6
Additional Studies and Briefings	6
BUPERS Brief on Minorities and Women in Naval Aviation	7
FY92–FY96 Attrition Rates for Navy Flight Training.....	7
FY92–FY96 Attrition Rates by Platform.....	7
Center for Naval Analysis (CNA) Study: Revalidation of Aviation Selection Test Battery (ASTB)	8
VADM Patricia Tracey’s DACOWITS Brief	11
Investigation of Organizational Factors.....	11
Analysis of the Navy Equal Opportunity/Sexual Harassment Survey.....	11
Findings from NPRDC Gender Discrimination Study	14
Interviews and Focus Groups	15
Interview Demographics.....	15
Interview/Focus Group Key Findings.....	16
Positive Perceptions of Quality of Aviation Training.....	17
Swimming Requirement No Longer an Obstacle.....	17
Lack of Prior Exposure to Aviation	17
Instructors.....	18
Grading	19
Discrimination	20
Reverse Discrimination	20
Tokenism.....	21
Mentoring	22
Jet Pipeline Environment and Culture.....	22
Culture Clash.....	23

Recommendations and Discussion	23
References	29
Appendix A: Background Slides	A-0
Appendix B: Aviation Study Interview Protocol.....	B-0

List of Tables

1. FY92–FY96 attrition rates for Navy flight training	7
2. FY92–FY96 attrition rates by platform	8
3. 1996 NEOSH survey racial/ethnic discrimination behaviors experienced during the past 12 months (percentage “Yes”).....	12
4. 1996 NEOSH survey gender discrimination behaviors experienced during the past 12 months (percentage “Yes”)	13
5. NPRDC gender discrimination study: Perceptions of gender hostility by command type	15
6. Interview demographics	16

List of Figures

1. Naval aviation training pilot flight pipelines.	2
2. Percentage who experienced racial/ethnic discrimination during the past 12 months (from the 1996 NEOSH survey).	12
3. Percentage who experienced gender discrimination during the past 12 months (from the 1996 NEOSH survey).	14

Background

In November 1993, the Secretary of the Navy promulgated an *Enhanced Opportunities for Minorities Initiative*. The initiative set a goal of 12 percent Black¹ representation, 12 percent Hispanic representation, and 5 percent Asian/Pacific Islander representation throughout the Navy within 20–25 years. The initiative represented a dramatic increase from the previous minority goals contained in the Navy's Affirmative Action Plan (NAAP) that had set goals of 6 percent Black and 3 percent Hispanic officers—a figure derived from minority representation among college graduates. Furthermore, the NAAP set a Navy-wide goal, but did not set specific goals for the different Navy communities and designators.

While the enlisted force was close to attaining these overall goals, the proportions of minority officer groups in the Navy during the 1990s were less than these targets. Although there were increases in the proportion of Black officers, for example, from 3.24 percent of all officers in 1985 to 5.91 percent as of 30 June 1997 (from the quarterly reports published by the Chief of Naval Personnel), the representation during the late 1990s was considerably less in communities such as aviation. The third quarter FY97 statistics indicate that Blacks comprised 2.66 percent of pilots, Hispanics 3.29 percent, and Asian/Pacific Islanders 1.54 percent. The percentages were somewhat higher for Naval Flight Officers (NFOs): Blacks, 3.04 percent; Hispanics, 4.16 percent; and Asian/Pacific Islanders, 2.81 percent. Women comprise 3.31 percent of pilots and 2.81 percent of NFOs. While these numbers are low compared to Navy's goals, some small progress had been made. In 1985, Naval aviation was comprised of 1.58 percent Black officers; in 1990, the figure had increased to 2.01 percent and, as noted, by 1997 Blacks comprised 2.66 percent of pilots and 3.04 percent of NFOs.

Concern for the success of the initiative led to a focus on minority career issues. Because of the lower numbers of minorities in aviation, the disproportionate number of flag officers coming from the aviation community, and the higher attrition rates of minorities from the Navy's flight program, the Equal Opportunity Division of the Bureau of Naval Personnel (PERS-61) tasked the Navy Personnel Research and Development Center (NPRDC; now Navy Personnel Research, Studies, and Technology, NPRST) to conduct a study of minorities in aviation. Since Bureau of Naval Personnel (BUPERS) briefings during 1996 documented the continued higher rate of attrition of minorities and women from the Navy's aviation training program, this effort, focused on aviation training. The study sought to determine what barriers are faced by minorities and women in aviation training as well as what organizational factors influence the success of minorities and women in aviation training.

Although the study's title indicates a focus on "minorities," it quickly became apparent that most of the previous research, policies, and interventions have dealt primarily with Blacks, since historically Blacks comprised a large percentage of the

¹ The use of "Black," "Hispanic," and "Asian" is included in this document to maintain the terminology used at the time of the research and is not meant to imply a preference for these terms over others that may be used at present (e.g., "African-American," "Hispanic-American" or "Latino," "Asian-American").

minorities entering Naval aviation. Furthermore, the minority issues raised during the interviews that were conducted appear to apply primarily to Blacks and were voiced most forcefully by Blacks. While the study did interview a number of Hispanic and Asian/Pacific Islander flight students and instructors, there were fewer consensuses about issues or problems that might exist. Additionally, the total absence of any previous Navy or academic studies or analyses of Hispanic or Asian/Pacific Islanders in aviation led to the focus being primarily on Blacks as the minority group of interest. This emphasis has changed over the years since this study was conducted and presently the Navy's focus has expanded to a diversity perspective that includes members of various race/ethnic groups and women.

This study dealt with Naval aviation training. Figure 1 shows the training pipelines for Navy pilots at the time the study was conducted in 1997. As described by Hiatt, Mayberry and Sims (1997, p. 10), students first complete Aviation Preflight Indoctrination (API), a four month training period that does not involve flying aircraft. Those who successfully complete API are sent to primary pilot training which can last anywhere from a year to a year and a half. During primary, students get their first opportunity to fly aircraft. Successful graduates of primary move on to Intermediate training in either the strike/jet, maritime/prop, or helicopter pipelines. Those who complete intermediate go on to advanced training in their pipeline, after which they are "winged" as Naval aviators.

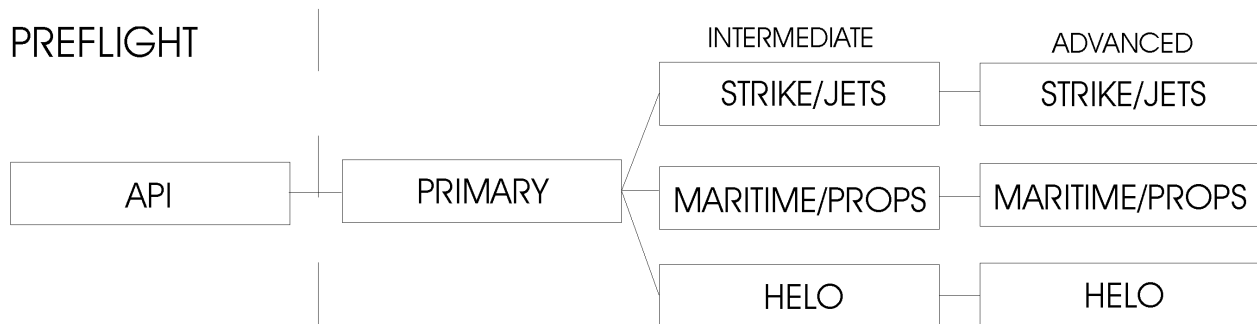


Figure 1. Naval aviation training pilot flight pipelines (1997).

Study Approach

This study took a three-pronged approach (see Appendix A for slides summarizing the findings discussed in this report). The first portion was a review of historical documents related to minorities and women in Naval aviation training. Although issues related to minorities and women in Naval aviation training are still of concern today, the Navy has been aware of these issues and has studied them since the late 1970s. These included the notes of the Minority Flight Attrition/Recruiting Working Group that met under BUPERS sponsorship from the mid-1980s to the mid-1990s. Additionally, several Naval Inspector General investigations (IGs) related to minority issues in Naval aviation training were reviewed as were relevant BUPERS documents and memos contained in the Navy's Equal Opportunity Office's (PERS-61) historical files. Research studies and technical reports related to the study's topic areas were also reviewed.

During the late 1990s, there was a renewed interest in women and minority issues in Naval aviation training. The Center for Naval Analysis (CNA) conducted a validity study of the revised aviation selection device (Hiatt, et al., 1997). VADM Tracey briefed the Defense Advisory Committee on Women in the Services (DACOWITS) on these issues (Tracey, 1997) and BUPERS-432 produced a briefing on the status of minorities and women in Naval aviation. These and other studies and briefings were reviewed as the second part of the project.

While these historical studies provide much knowledge about the status of minorities and women in Naval aviation training, none of the previous efforts conducted structured interviews with the current stakeholders in Naval aviation training. For the third portion of the study, interviews were conducted with aviation students, instructors, staff, research psychologists, and other subject matter experts to gain a sense of the status of issues related to minorities and women in the Navy's aviation training pipeline.

Historical Review for the 1997 Study

Naval Aerospace Medical Research Laboratory Studies of Aviation Selection Test Scores and Performance for Minorities

Minority issues in aviation training have been focused on since the 1970s. In 1977, because of concerns raised about equal opportunity provided to Blacks in Naval aviation, the Chief of Naval Aviation Training (CNATRA) asked the Naval Aerospace Medical Research Laboratory (NAMRL) to make comparisons of the grades and attrition rates of Blacks and Whites in Naval aviation training (Baisden & Doll, 1978; Doll & Baisden, 1979). This initial tasking resulted in a number of studies that looked at Black-White performance in aviation training as affected by aviation selection test scores, college background, and procurement source (Baisden, 1980; Baisden & Doll, 1978, 1979; Doll & Baisden, 1979). Baisden and Doll (1978) compared White and Black student performance in aviation training for the years 1973–1976. They found that when students were matched on aviation selection test scores and other variables (e.g., procurement source) that there were no Black-White differences in attrition from the flight program.

These findings were replicated by subsequent research. In a similar 1988 study (described by Miller, 1994), NAMRL matched 50 White and 50 Black students on college background and scores on the aviation selection battery. The results indicated equal overall attrition rates, and equal pipeline assignments. Also, a study conducted by CNA (Hiatt, et al., 1997) found that the attrition rates of minorities in primary flight training were not significantly higher than those of Whites when differences in scores on the Aviation Selection Test Battery (ASTB) were taken into account.

Minority Flight Attrition/Recruiting Working Group Minutes

This minority aviation group, sponsored by PERS-61, existed from the mid-1980s until it was disbanded in the mid-1990s (it has been called the Minority Flight Attrition Recruiting Working Group and later the Minority Aviation Officer Working Group). It met every six months to look at issues impacting on minorities in aviation, to monitor progress in reaching Navy goals, to decrease minority attrition, and to monitor minority career progression. By the mid-1990s, its initiatives had gotten bogged down and high-level interest had waned.

A review of the Working Group's Minutes indicates many issues originally raised in 1987 remained through the mid-1990s:

1. Difficulties in attracting qualified minorities to the flight program
2. High minority attrition from the aviation training program
3. Concerns about fairness of the aviation selection test battery
4. Concerns about subjective grading by flight instructors
5. The need for sensitivity training for flight instructors

One theme found throughout the working group's minutes is the need that flight instructors receive some sort of "sensitivity training." On June 30, 1987, the working group recommended providing sensitivity training to aviation instructors. The group's March 29, 1989 minutes recommended developing a sensitivity training program for aviation instructors to be provided during the instructor training course. The group's November 1990 minutes reflect the same concern: "If we do not impart aviation instructors with the need to recognize cultural differences that can be perceived as negative traits, we will continue to have a problem with minority students in the cockpit."

Naval Inspector General Investigation of Minority Attrition from Aviation Training

In 1987, the Naval Inspector General (IG) conducted an investigation of minority attrition from the Naval Aviation Training Command (NAVINSGEN, Case No. 871157 of 23 Nov 87). That investigation led to a number of minority-based initiatives by CNATRA and the establishing of goals for the number of Black pilots and NFOs.

One important conclusion of the IG was that instructors' sensitivity to individuals from different cultures might be lacking. The report noted, "Specifically, I believe that instructors need to be more sensitive to racial and cultural factors, and ensure that minority students are provided with the full benefit of instruction and coaching to enable them to successfully compete" (Department of the Navy, 1987, p. 2).

A historical review at the time found that many pre-aviation and remedial programs existed during the 1980s both before and as a result of the 1987 Navy IG (Department of the Navy, 1987). In 1984, the Minority Officer Accession Task Force (MOATF) final report (CNO, 1984) recommended that minority students get preflight training as a way

to reduce subsequent attrition. The 1987 Naval IG (Department of the Navy, 1987) and a point paper by a CNATRA staff officer (Helm, 1988) describe a number of programs begun in 1985 that aimed to reduce the number and percentages of Black attrition. TADPOLE was a program begun in 1985 that sought to teach swimming before students began aviation officer candidate school. AVTRACK was an 8-week instruction course given at Officer Candidate Preparatory school in Newport, RI to minorities identified as high academic risks. FLEET AWARENESS PROGRAM, begun in March 1988, involved CNATRA issuing a quarterly message to the Fleet that encouraged minority Fleet aviators to visit aviation training squadrons. The purpose was to expose minority aviation students to Fleet role models. NAVIP (Navy Very Important Prospect) introduced minority candidates to the Naval Air Station (NAS) Pensacola environment a few weeks early, and CONTROLLED ROLLBACK, was a policy that allowed minority students who were having problems to get extra instruction and stay in the program. Finally, there was INSTRUCTOR MINORITY AWARENESS TRAINING begun in 1998. This was a 1-hour course given to all prospective flight instructors at the Flight Instructor Training Course (FITC) dealing with minority-related issues in aviation training. The course content covered a number of relevant topics: Navy affirmative action goals, aviation selection test scores, attrition, recruiting problems, competition from industry, cultural differences, potential minority adjustment problems due to the “heart of Dixie” location of Naval aviation training sites, and CNATRA initiatives to help minorities. Interviews with a CNATRA aviation psychologist indicated that these programs were no longer in existence at the time of the 1997 study.

Johns Hopkins University Evaluation of Racial Issues in Naval Aviation

In the mid 1980s, researchers from Johns Hopkins University (Braddock, Crain, Taylor, & Wu, 1988) were called in to look at the issue of minorities in aviation after the Tuskegee airmen had made an inquiry about why there were not more Blacks in Naval aviation. The study noted that the high attrition rates of minorities in aviation was a “longtime concern of Navy decision-makers” (Braddock, et al., 1988, p. 5). The study surveyed over 900 aviation training students and conducted more than 200 interviews with staff and operational personnel in Naval aviation. It was found that many minority aviation students felt they were the victims of racial discrimination, while almost none of the White students or instructors indicated awareness of any racial bias in Naval aviation training.

The study also dealt with the testing issue. The Johns Hopkins Study (Braddock, et al., 1988) recommended adding psychomotor tests for mechanical skills, hand-eye coordination, and reflexes to the aviation selection test battery but also concluded “we do think there are limits to the ability of any pencil-and-paper test to predict performance in the cockpit” (p. 12).

Naval Postgraduate School Survey of Flight Student and Instructor Perceptions

As part of his Master's thesis, Miller (1994) surveyed several hundred flight students and instructors regarding perceptions of racial/ethnic and gender issues. He found that Blacks were more likely to agree that racial bias existed in Naval aviation training than Whites did, and women were more likely to perceive that gender bias was occurring than men. An analysis of the written comments found while many Blacks felt that the grading was biased against Blacks, many Whites perceived a "double standard" where women and minorities were graded easier and that standards were lowered to meet quotas.

PERS-61 Survey of Minority Aviators

In 1994, the Bureau of Naval Personnel (PERS-61) sponsored a survey of the perceptions of minority Naval aviators. A short 8-item survey was distributed in April 1994 to all minority aviators in the Navy (N = 1,036). The survey had a low response rate (17%) with completed surveys being received from 64 Black and 92 Hispanic aviators and thus should be interpreted cautiously. An analysis of the responses to the items found that many Black (53%) and some Hispanic (17%) officers felt they experienced discrimination in aviation training and in the Fleet, with the form of discrimination often being not getting the benefit of the doubt or the same breaks that their White counterparts did. An analysis of the comments found that many Blacks indicated that they felt uncomfortable being the only minority member in a command, there were a lack of "role models" for minorities to look up to, and a perception existed among some White instructors who believed women and minorities are in aviation due to quotas and resented them for that. In briefings of the survey results within BUPERS, it was recommended that the Navy access more minorities into aviation through all commissioning sources and increase the numbers of minority instructor pilots.

Additional Studies and Briefings

At the time the 1997 study was conducted, there was renewed interest in issues related to minorities and women² in Naval aviation. The key recent studies and briefings are summarized below.

² At the time of the study, there was little research available specifically on women in Naval aviation training, although women have graduated from Navy flight training school as pilots since 1973 and as NFOs since 1979. Prior to 1993, the combat exclusion law limited the assignments of women in aviation (Baisden, 1992). With the change in the combat exclusion law in November 1993 allowing women to pilot combat aircraft and serve on combatant ships, more attention was placed on the integration of women in Fleet aviation squadrons. This aspect of the women in aviation issue reached a peak of interest with the Naval Inspector General's report on the LT Carey Lohrenz case (Department of the Navy, 1997) and the media attention that went with it. The report concluded that in its race to beat the Air Force to have the first women combat flyers, the Navy rushed the integration of women into jet carrier wings and Fleet Replacement Squadron's on the West Coast. The result of the extra attention was a backlash from the

BUPERS Brief on Minorities and Women in Naval Aviation

In September 1996, BUPERS-432 briefed “Status of Minorities and Women in Naval Aviation.” A review of Naval aviation racial and gender distributions between 1992–1996 was presented. The briefing indicated that the representation of minorities and women in the Naval aviation community ranged from 2–3 percent. Higher attrition rates were found for minority and women pilots and NFOs from Naval aviation training command pipelines. These higher attrition rates were one of the reasons that the 1997 study was tasked by PERS-61.

FY92–FY96 Attrition Rates for Navy Flight Training

As the BUPERS-432 briefing indicated, Blacks have the highest attrition rates while Whites have the lowest. Table 1 presents attrition data for FY92–FY96 from the 1997 CNA study. These data found, however, that the differences between the groups in attrition rates presented in Table 1 were not statistically significant for Navy pilots. When Navy and Marine Corps data were combined, however, the Black-White attrition rates for primary training were statistically significant. None of the other groups differed significantly from Whites when the Marine Corps data were combined with Navy for any of the other possible comparisons. The higher attrition rates for Blacks, especially in primary, are in line with historical data from the 1980s.

Table 1
FY92–FY96 attrition rates for Navy flight training³

	Primary	Intermediate	Advanced
White Male	8.4%	1.5%	2.6%
Black Male	13.8%	5.1%	7.1%
Hispanic Male	12.1%	1.6%	7.7%
Other Male	8.4%	2.6%	3.0%
All Males	8.8%	1.7%	2.9%
All Females	10.5%	2.9%	4.1%

Note: No statistically significant difference between the groups was obtained.

FY92–FY96 Attrition Rates by Platform

Table 2 shows the attrition statistics by platform between FY92–FY96. The interpretation of these attrition statistics is sharply divided into two camps. The pro-selection test position advocated by CNATRA and NAMRL, and supported by the results

male pilots and instructors against these women. Questions were raised about whether the women had received preferential treatment in terms of lenient grading and extra flight time and if the women were truly qualified to fly carrier-based jets (Blazar, 1997; Department of the Navy, 1997).

³ Hiatt, C. M., Mayberry, P. W., & Sims, W. H. (1997). *Revalidation of the Aviation Selection Test Battery (ASTB)* (CAB 97-18, pp. 45–54). Alexandria, VA: Center for Naval Analyses.

of the CNA validity study, is that differences in attrition are due to differences in ASTB test scores. This view contends that minorities and women score lower on the aviation selection tests and thus are more likely to be attrited. The anti-selection test position argued in the notes of the Minority Aviation Officer Working Group and the Johns Hopkins Study is that the tests may have a cultural bias that disproportionately screens out qualified minorities who may become good pilots but do not do well on standardized tests.

Table 2
FY92–FY96 attrition rates by platform

	Strike	Props	Rotary	E2/C2
White	4.5%	1.3%	3.1%	4.5%
Black	17.9%	8.3%	2.6%	0.0%
Hispanic	0.0%	6.3%	12.8%*	0.0%
Other	5.9%	0.0%	3.6%	36.4%*
All Males	4.5%	1.4%	3.2%	6.%
All Females	19.0%	0.0%	4.8%	0.0%

*Significant difference ($p < .01$) in attrition between White and Black in Strike, White and Hispanic in Rotary, and White and Other in E2/C2. (Source: CNATRA, June 1997)

There is no simple resolution to this debate. It is similar to other debates about standardized testing revolving around instruments such as the SAT, GRE, LSAT, and MCAT that also show similar racial/ethnic differences and may disproportionately screen out minorities such as Blacks and Hispanics from admission to college, graduate school, law school, and medical school. Those advocating the elimination of the aviation selection test are faced with the challenge of providing an alternative selection method: one that would be a valid predictor of later success in Naval aviation while reducing the current racial/ethnic and gender differences.

Center for Naval Analysis (CNA) Study: Revalidation of Aviation Selection Test Battery (ASTB)

The ASTB refers to the series of tests that all candidates for Naval aviation training are required to take before being admitted to the program. At the time of the 1997 study, the ASTB was composed of the Academic Qualification Rating (AQR), the Pilot Flight Aptitude Rating (PFAR), the NFO Flight Aptitude Rating (FOFAR), the Pilot Biographical Inventory (PBI), the NFO Biographical Inventory (FOBI), and the Officer Aptitude Rating (OAR) (Hiatt, et al., 1997). The AQR measures math and verbal skills, the FAR and PFAR assess mechanical and visual spatial abilities, and the PBI and FOBI measure biographical information as related to aviation interests, teamwork, etc. The raw scores on the various subtests of the ASTB are weighted into three composites: the AQR, the PFAR, and PBI for pilots; and a parallel composite for NFOs. Selection to the aviation program was made based on scores on these composites (Dean, 1996).

The aviation selection battery was originally developed during World War II as a way to cut the high rates of attrition in aviation training. It was revised in 1953, 1971, and 1992, with a minor revision in 1995. Before World War II, attrition rates from aviation training were as high as 50 percent, when selection was based on a flight physical and a non-standardized psychiatric interview (Petho, 1993). In contrast, the standardized psychometrically-based selection tests cut attrition rates to about 20–25 percent (Griffin, 1988). Indeed the original aviation selection screen reduced pre-WWII attrition rates by half (Braddock, et al., 1988). Given the costs involved in training Naval aviators, the reduction in attrition rates is the selection tests' major advantage.

Research dating back to the World War II era indicated that measures of general intelligence, mechanical comprehension, psychomotor ability, and biographical information were reliable predictors of success in the early stages of aviation training (Dean, 1996; Petho, 1993). Thus, tests measuring these abilities have been components of the aviation selection test battery. As Dean (1996, p. 9) notes, tests measuring these abilities have been used to predict success in aviation training in all the military services: "[There is] little doubt about the usefulness of testing for mechanical comprehension, general intelligence, direction following, and reasoning skills for the screening of candidates. These skills have been shown to be sound predictors of both academic and flight performance by the Navy, the Army and the Air Force."

It is important to realize that the aviation selection tests have been designed to predict success only in the initial stages of flight training—ground school (API) and primary flight training. While there have been attempts to develop tests to predict long term success, researchers have not been able to agree upon objective measures of long-term success in Naval aviation that the tests could be validated against (North & Griffin, 1977).

The Educational Testing Service (ETS) was involved in the development of the 1971 and the 1992 aviation selection tests (Hiatt, et al., 1997). In 1984, ETS was contracted to revise the previous aviation selection battery due to changes in the demographics of the applicant pool, concerns that the previous version of the test was compromised, decreased predictive validity of the previous test, and changes in Naval aviation training including the greater use of simulators (Frank & Baisden, 1993). ETS and the Navy reviewed the aviation training curriculum and the literature on aviation selection, conducted job and skill analyses of aviation training, developed and validated a new test battery that became operational in 1992 (Street, Chaman, & Helton, 1993). It was found that the revised ASTB improved predictive validity over former versions and took less time to complete. Validation studies indicated that it successfully predicted attrition, academic and flight performance through primary aviation training (Frank & Baisden, 1993).

In terms of minority issues, the Navy's aviation screening tests have been challenged because minorities, particularly Blacks, have historically scored lower than Whites. Claims that the revised test was biased against minorities resulted in five items on the biographical inventory being removed in September 1995. However, the CNA study supported the validity of the selection tests with or without the five items included. Baisden (1992) has noted that the biographical inventory adds validity to the aviation screen—if the biographical component were to be removed, attrition would be predicted to increase by 25 percent.

Proponents of the validity of the aviation selection battery claim that differences in Black-White attrition are due to differences in test scores. Defenders of the test, argue that it is hard to get highly qualified minorities. The other camp contends that the test unfairly restricts qualified minorities who may have the ability to be excellent Naval aviators or NFOs but do not test well. As early as 1984, the MOATF (CNO, 1984) recommended the use of additional testing instruments to supplement the aviation selection test battery. This perspective would agree with conclusions of the Johns Hopkins Study that “we do think there are limits to the ability of any pencil-and-paper test to predict performance in the cockpit” (Braddock, et al., 1988, p. 57).

To partially address claims that the test was unfair, the aviation selection test battery was revised in 1992 by ETS for the first time in 20 years. The Center for Naval Analysis (CNA) (Hiatt, et al., 1997) did the first comprehensive study of the revised aviation selection battery to see how valid a predictor of performance it was and to determine whether it had an adverse impact on the selection of minorities and women. Using samples of Navy and Marine Corps personnel who took the selection battery during the past five years, the CNA study found evidence supporting the validity of the revised aviation selection test battery (ASTB). The CNA study found a high correlation between scores on the ASTB and subsequent performance in the API and primary pilot phases of aviation training. The study concluded that the aviation selection screen was not biased against women or minorities because there was no significant statistical difference due to race or gender in the relationship between test score and subsequent performance. In other words, people who did well on the tests did well in the program (and vice versa) regardless of their race or gender. By these standards, the tests were not seen as biased. However, the CNA study did find that the aviation selection tests had *adverse impact*. That is, lower percentages of women and minorities qualified than did White males at various cut off scores used for selection. The authors note that adverse impact occurs on other tests of general ability (e.g., SAT) and that, legally, adverse impact is considered acceptable if the test is shown to be statistically valid and unbiased. The CNA report concluded that the revised aviation selection battery met these two requirements.

While the CNA study (Hiatt, et al., 1997) found the ASTB to be a valid selection device, an analysis reported in Appendix D of that study suggests a way that the percentage of eligible minorities and women might be increased. The screen requires a minimum score of 3 on the AQR, 4 on the PFAR, and 4 on the PBI. As noted in the CNA study, the percentage of minorities and women who meet the minimum standards are lower than for White males on all three tests. The cumulative effect of using all three composites is to reduce the percentage of qualified minorities and women dramatically over the percentage qualifying on each individual test. When the 3/4/4 composite is used, CNATRA (total ASTB Examinee Pool to Feb 97) data indicate that 65 percent of

Whites, 33 percent of Blacks, 50 percent of Hispanics, and 52 percent of Asian/Pacific Islanders qualify. While 63 percent of males qualify, just 35 percent of females do. If, however, just the AQR is looked at as a selection screen, the qualification rate of all groups increase: 90 percent of Whites, 59 percent of Blacks, 80 percent of Hispanics, and 82 percent of Asian/Pacific Islanders would now qualify. Similarly, 88 percent of males and 69 percent of females would qualify. (If two of the three tests were used, the qualification rate would increase over the three test composite but be less than the single test screen). Appendix D of the CNA study (Hiatt, et al., 1997) recalculated the validity of the selection screen in predicting performance and attrition if single or double predictors rather than the composite of three were used. They found that a single unit-weighted subtest had virtually the same validity and predicted attrition almost as well as the 3-test weighted composite. They noted “no empirical support for the current weights associated with the subtests for the AQR and PFAR composites...a composite that simply unit-weights each subtest may be justified” (Hiatt, et al., 1997, p. 94). A caution, however, is that the individuals in the test sample were already admitted to the program.

VADM Patricia Tracey’s Defense Department Advisory Committee on Women in the Services (DACOWITS) Brief

In VADM Patricia Tracey’s April 1997 DACOWITS briefing on flight training retention for women, minorities, and female minorities (Tracey, 1997), the ASTB was found to predict training performance and attrition equally for all ethnic and gender groups. She concluded that significant differences in aviation selection test scores between White males, minorities, and women explain the group differences in attrition rates in aviation training. Her recommendations focused on three areas: (1) better recruiting of minorities and women to the aviation training program, (2) evaluating the impact of preparatory programs on performance in initial phases of flight training, and (3) investigating factors other than ASTB test scores that contribute to success in aviation training.

Investigation of Organizational Factors

Analysis of the Navy Equal Opportunity/Sexual Harassment Survey

While the 1997 study focused on minorities and women in Naval aviation training, concerns had been raised earlier about racial/ethnic and gender issues within the entire aviation community. To get a snapshot of these issues, the 1996 Navy Equal Opportunity/Sexual Harassment (NEOSH) survey was reanalyzed comparing those in aviation squadrons with the rest of the Navy. Table 3 presents the rates for eight racial/ethnic discrimination behaviors experienced by Black and White officers comparing aviation squadrons with the rest of the Navy. Figure 2 presents the overall rates of racial/ethnic discrimination for Black and White officers in aviation squadrons versus the rest of Navy.

Table 3
1996 NEOSH survey racial/ethnic discrimination behaviors experienced
during the past 12 months (percentage “Yes”)

	White Officers		Black Officers	
	Aviation	Rest of Navy	Aviation	Rest of Navy
Negative Comments	4	6	26	22
Offensive Jokes	0	5	25	17
Ignored by Others	2	5	33	19
Given Menial Jobs	2	2	15	8
Not Asked to Socialize	2	3	17	10
Denied Potential Reward/Benefit	0	3	15	7
Physically Threatened	0	1	6	2
Physically Assaulted	0	0	0	0

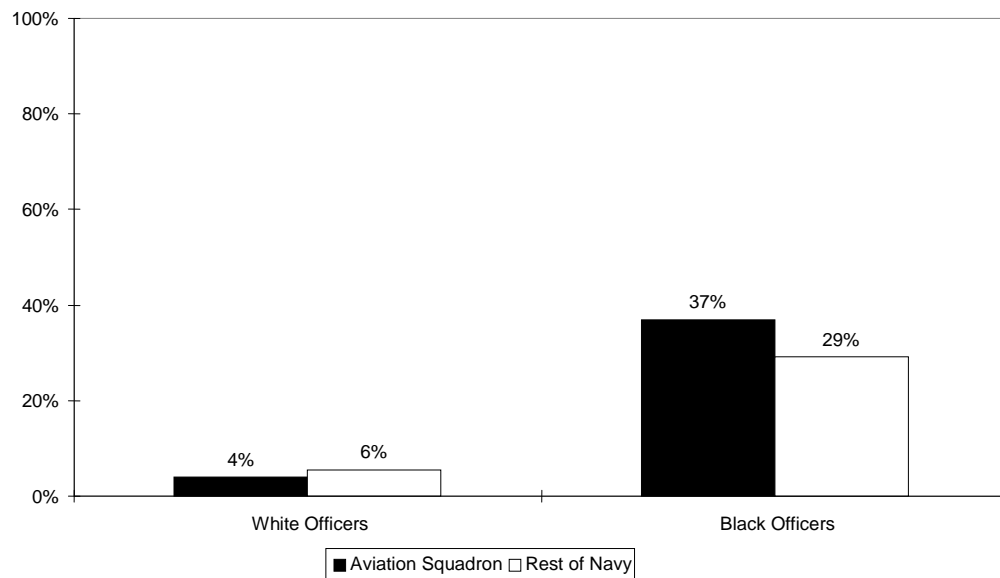


Figure 2. Percentage who experienced racial/ethnic discrimination during the past 12 months (from the 1996 NEOSH survey).

While Black officers in aviation commands reported more discrimination than Black officers in the rest of the Navy, the differences were not statistically significant and were much smaller than the gender findings noted below. In terms of individual

discrimination behaviors measured by the NEOSH Survey, the pattern was the same: Blacks in aviation reported higher rates for seven of the eight discrimination behaviors (negative comments, offensive jokes, ignored by others, given menial jobs, not asked to socialize, denied potential reward/benefit, physically threatened) than Blacks in the rest of the Navy, but the differences were not statistically significant. The analysis of overall Equal Opportunity (EO) climate found that both Whites and Blacks in aviation had more positive EO climate perceptions than their counterparts in the rest of the Navy. However, for Whites in aviation the perceptions were significantly more positive (4.31 on a 5-point scale) than for Whites in the rest of the Navy (4.15). For Blacks, there were no statistical differences between EO climate in aviation (3.96) and the rest of the Navy (3.85)

Table 4 and Figure 3 present similar NEOSH Survey findings for gender discrimination. As can be seen, women officers assigned to aviation commands reported significantly higher levels of gender discrimination than those having other Fleet assignments. This was true at the global level reported above and also for individual discrimination behaviors. Women in aviation commands reported experiencing significantly higher levels of negative comments (63% aviation; 31% rest of Navy), being ignored by others (39% aviation, 20% rest of Navy), being given menial jobs (28% aviation, 9% rest of Navy), and not being asked to socialize (37% aviation, 15% rest of Navy).

Table 4
1996 NEOSH survey gender discrimination behaviors experienced during the past 12 months (percentage "Yes")

	Male Officers		Female Officers	
	Aviation	Rest of Navy	Aviation	Rest of Navy
Negative Comments	1	5	63	31 [*]
Offensive Jokes	1	3	39	23
Ignored by Others	1	3	39	20 [*]
Given Menial Jobs	0	2	28	9 [*]
Not Asked to Socialize	0	4	37	15 [*]
Denied Potential Reward/Benefit	0	2	4	5
Physically Threatened	0	1	3	3
Physically Assaulted	0	0	4	1

^{*} Statistically significant difference ($p < .01$) between Aviation Squadron and Rest of Navy.

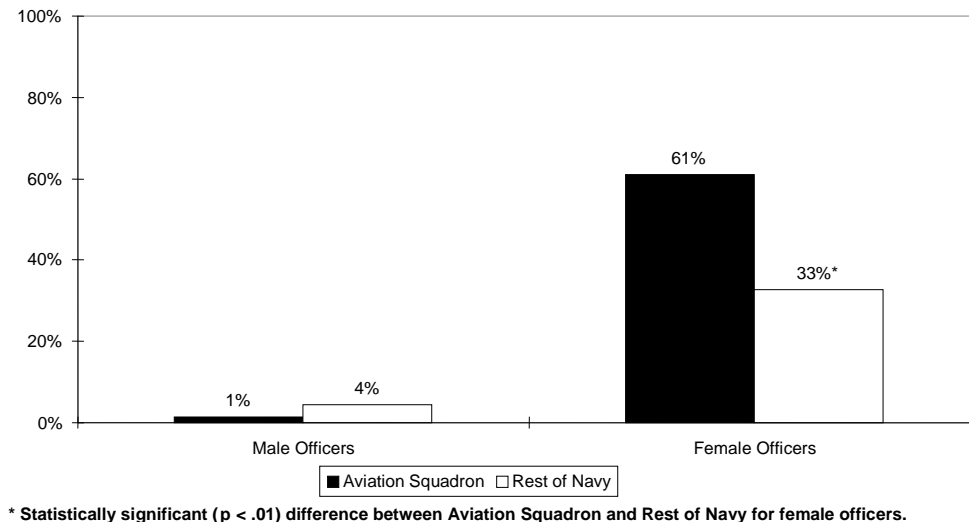


Figure 3. Percentage who experienced gender discrimination during the past 12 months (from the 1996 NEOSH survey).

Findings from NPRDC Gender Discrimination Study

Table 5 presents the results of a Navy-wide gender discrimination survey (Thomas & Thomas, 1997) that provide data on perceived gender hostility in various Navy settings. The study was sponsored by PERS-61 to gather information on gender discrimination in the Navy. Surveys were mailed to a random sample of 10,000 active duty personnel equally divided among men and women, officers and enlisted. The results indicated that the occurrence of hostility between men and women varied by command type. Highest rates of gender hostility were found among female officers in aviation commands. These results reinforce the NEOSH Survey findings of greater perceived gender problems in aviation compared to other communities. This also supports the finding of the Naval IG report on the LT Carey Lorenz case. The IG concluded that while the first women integrated into Fleet jet squadrons did not face sexual harassment, they encountered hostility, ostracism, and isolation from both male pilots and instructors (Blazar, 1997; Thomas & Vistica, 1997). It should be noted that the results of a 2006 Quick Poll found more positive work-climate indicators for women in Naval aviation (see https://quickpolling.nprst.navy.mil/execsum_NAE_Mar06.pdf).

Table 5
NPRDC gender discrimination study: Perceptions of gender hostility
by command type⁴

	Male Officers	Female Officers
Aviation Command	14%	44% [*]
Ship	19%	39% [*]
Training Command	4%	23% [*]
Shore Command (not training)	12%	19% [*]
Other	16%	16%

^{*}Statistically significant difference ($p < .01$) between male and female officers.

Interviews and Focus Groups

This study used structured interviews (see Appendix B) with students in various stages of aviation training, flight instructors assigned to the aviation training wings, and interviews with relevant staff and other subject matter experts. While some of the issues investigated have also been looked at by others, this study is unique in providing objective and confidential interviews of a wide spectrum of minority, majority, and women students by outside, "neutral" investigators. Its focus on organizational factors related to the success of minorities and women in Naval aviation training is also different from the approach taken by many previous studies.

The structured interviews were developed based on a literature review of previous work and surveys in this area (e.g., Braddock, et al., 1988; Burke, 1995; Miller, 1994). Items were included that covered key areas relating to minority and women's issues in Naval aviation training including topics such as academic background, previous aviation experience, views of instructors, grading, mentoring, discrimination, reverse discrimination, reasons for attrition, and suggestions for improvements.

Interview Demographics

Table 6 presents the demographics for the interviews conducted in connection with this study. The interviews with aviation students and instructors were conducted individually by a male and female interviewer from NPRDC during the June 9–20, 1997 timeframe. Interviews were conducted at the major Naval aviation training sites: NAS Kingville, TX; NAS Corpus Christi, TX; NAS Pensacola, FL; NAS Whiting Field, FL; and NAS Meridian, MS. The interviews lasted about a half hour each and respondents were assured that their individual responses would remain anonymous and confidential.

⁴ Thomas, M. D., & Thomas, P. J. (1997). *Nature of Gender Discrimination in the Navy* (NPRDC-TN-98-1). San Diego: Navy Personnel Research and Development Center.

Table 6
Interview demographics

Students (N = 104)	
White Males	21
Black Males	36
Hispanic Males	13
Asian/Other Males	13
Females	21
Instructors (N = 33)	
White Males	16
Black Males	5
Hispanic Males	2
Asian/Other Males	6
Females	4
Subject Matter Experts (N = 21)	
Aviation Training Staff Officers	8
Aviation Psychologists/Researchers	4
BUPERS Aviation Officers/Detailers	4
Other Aviation Experts	5

Because the study focused on minorities and women in Naval aviation training, the plan was to maximize the numbers of minorities and women interviewed at each site. Nonetheless, interviews were also conducted with White students, instructors, and staff personnel. In addition to the individual interviews, an off-site focus group with ten Black aviation students was held in Corpus Christi, TX as part of a National Naval Officers Association (NNOA) meeting. Individual interviews were also conducted with other stakeholders and subject matter experts in Naval aviation training. These included interviews with staff officers at CNATRA, CNET, and BUPERS as well as aviation researchers and psychologists at NAMRL and Naval Operational Medicine Institute (NOMI).

Interview/Focus Group Key Findings

As is typical with interview and focus group data (see Edwards, Thomas, Rosenfeld, & Booth-Kewley, 1997), the responses to the structured interviews and focus group were categorized into major themes or dimensions. These were then prioritized in terms of frequency of occurrence, importance, and relevance to potential future actions.

Positive Perceptions of Quality of Aviation Training

Although the interviews conducted with students and staff found a number of areas for improvement, it is important to note that almost everyone interviewed had a very positive opinion of Naval aviation training. It was striking that even a number of students who had been attrited from the program were positive about the experience and were typically resigned to the fact that flying is not for everyone. Minorities and women who were critical of certain aspects of the program that they felt treated them or others in their group unfairly still tended to view the overall program positively, focusing their criticism on a few “bad apples” who were responsible for unfair treatment.

In visiting the various training sites, it became apparent that Naval aviation was becoming the military standard. In addition to training Navy and Marine pilots, the training was rapidly becoming integrated with Air Force students. This, in addition to the foreign nationals who pay to be trained, makes it apparent that Naval aviation training is an elite, highly-desired program. Yet, in some of the interviews with aviation training staff officers, this recognition of the program’s excellence appeared to be associated with a fear of change. In essence, why change things and increase safety risks when we are doing so well now? However, since it is likely that to increase the diversity of aviation training in accordance with the Navy’s goals, some changes to the status quo will need to be made, the program’s widespread acceptance of excellence may serve as an organizational barrier to change.

Swimming Requirement No Longer an Obstacle

One reason for high minority attrition rates that historically was mentioned—swimming—was not seen as a major problem. Very few of those interviewed saw swimming as a problem and many commented on how good the swimming program was, including its remedial aspects. Historically, a side-issue of the swimming area has been swimming as a “time drain.” That is, minorities needed to spend so much time in remedial swimming that they could not concentrate on their studies. These interviews and focus groups did not validate this concern. However, this may be due to the fact that the interviews were almost exclusively of individuals who were in primary training or above and thus were beyond the swimming requirements of API.

Lack of Prior Exposure to Aviation

The results of the interviews indicated that prior flight experience is viewed as important, especially in the jet pipeline. Additionally, because many minorities and women lack prior exposure to aviation or prior flight training, they are already at a disadvantage when entering the program. Conversely, many Whites have wanted to be aviators their whole lives and have “corporate knowledge.”

Historically, the need for pre-program or remedial type interventions has often been noted. The 1987 Naval IG on minority attrition (Department of the Navy, 1987) recommended that CNATRA, “emphasize established procedures and policies to identify weak or slow Black students as early as possible and provide them with the benefit of regularly scheduled training with the most capable instructors” (p. 24), and said that

there needed to be “additional preparatory or ‘bootstrap’ programs to assist Black pilot and NFO candidates” (p. 3). It recommended consideration of the Navy providing preflight private pilot training for minority pilot candidates (p. 25). The CNA study found that previous flight hours was an important component in minority performance in the flight program: More Whites than minorities had large numbers of previous flight experience (Hiatt, et al., 1997). Our interviews with students, staff, and minority aviators repeatedly highlighted the need for pre-program exposure to bring people up to speed before they arrived at API training in Pensacola. Minorities noted that much of their experience in aviation training was in “catch up” mode, suggesting that a “head start” type experience might be helpful. One such program described in the *Navy Times* (Bennett, 1997) had students in Reserve Officer Training Corps (ROTC) programs learn about Naval aviation during their required summer cruise. The students received instruction at NAS Pensacola and some spent time on an aircraft carrier where they were exposed to the challenges of carrier-based aviation. Such a program would seem an excellent vehicle for increasing the pertinent exposure of minorities and women to naval aviation. At the very least, it is recommended that some sort of pre-training exposure program be implemented and evaluated to see whether individuals completing it do better in subsequent aviation training and whether their attrition is less. VADM Tracey in her April 1997 DACOWITS briefing (Tracey, 1997) similarly recommended evaluating the impact of preparatory programs on performance in API and primary flight training.

Instructors

A frequent theme in the interviews was that there was a lack of minority and women instructors in Naval aviation training commands. It was noted that minority and women instructors serve two important functions: they act as role models for minority and women aviation students, and serve as “reality checks” for White instructors demonstrating that minorities and women can do the job.

The need for more minority and women flight instructors is crucial. The November 1994 minutes of the Minority Flight Attrition/Recruiting Working Group recommended that there be at least one Black instructor at every aviation training squadron to serve as a role model. Data presented in VADM Tracey’s April 1997 DACOWITS briefing indicated that while 6 percent of the instructors in primary flight training and 7 percent of helicopter instructors are women, less than 1 percent of the jet and E-2/C-2 instructors are women (Tracey, 1997). Just 1.5 percent of the instructors in primary flight training are minorities with the figures being somewhat higher for jets (4%), maritime (5.5%), and helicopters (3%).

Minority students who were interviewed described the bias from instructors as subtle rather than overt. This dynamic was also noted in the Johns Hopkins Study (Braddock, et al., 1988). Since most instructors are White and there are few minorities in the program, the instructor may be positively biased in favor of those with whom he feels a greater “comfort zone” and against those who are different. As Braddock et al. (1988, p. 108) write, “It is not at all necessary that the minority student be prejudiced against Whites, or that the White instructor be prejudiced against Blacks or Hispanics. The mere fact that the instructor and the student come from two different backgrounds and are unfamiliar with each other can set off the dynamic we are talking about.”

The Minority Aviation Officer Working Group also noted lack of sensitivity of White instructors as a problem that minorities face. Their May 16, 1995 minutes indicated that “minorities continue to suffer from the insensitivity of instructors who are unfamiliar with the social obstacles minorities must overcome” (p. 3), and noted that there is a perception among instructors that minorities are let into the aviation program below standards.

The perception that some instructors see minorities and women as being there due to quotas was heard from a number of interviewees. It echoes findings noted by the 1987 Naval IG (Department of the Navy, 1987). That investigation found many Blacks perceived that instructors thought they were there due to quotas and were below average in ability. Interviews with CNATRA and NAMRL staff indicated that there is *no* quota system in Naval aviation training: Individuals who do not score above the Navy’s minimum on the aviation selection screen are not accepted into the program.

Grading

The issue of fairness in grading was a major concern of minorities, particularly Blacks whom we interviewed. Specifically, subjectivity in grading was a major complaint of Blacks, especially in primary flight training. Black students feel they are evaluated while Whites are taught. For borderline flights, Blacks feel they are not given benefit of doubt and mistakes get compounded, so they fly scared. Blacks feel that they are not permitted slip-ups; Whites often get a second chance. Air Force grading is seen by many as more objective and standardized. Like many of the current findings, our review of historical documents indicated that this issue has been raised previously. The subjectivity of the grading issue was noted in the Johns Hopkins study. It concluded, “Flight instructor judgments reflected in downs and review boards appear highly subjective. The system is so subjective that personal bias may be having a larger impact than one would assume or desire” (Braddock et al, 1988, pp. 5, 101). Miller (1994) quotes an October 19, 1992 story in the *Pensacola News Journal* contending that Blacks in aviation often face subtle discrimination in the form of tougher grading during flight training. This tougher grading was seen as resulting in low morale and higher attrition. Also, comments made on the aviation training exit survey commonly mentioned the need to standardize instruction, make the grading criteria objective, and have less subjectivity in grading by instructors (Baisden, 1997).

In this study, the issue of subjectivity in grading was the major complaint of most minorities and many women and Whites. The system is supposed to be objective, but many felt that it quickly becomes subjective—reputations become important, individuals become labeled, and negative labels follow a person. Once tainted, it becomes hard to overcome.

Though CNATRA policy requires that instructors change at student requests, instructor grades are averaged monthly, flight training is standardized, the Flight Instructor's Training Course (FITC) teaches instructors to tailor their instruction to allow for differences in student background (Tracey, 1997), it was apparent that many minorities and women do not see instructors or the grading system as fair and objective. As noted in the Foreword, partially as a result of the 1997 briefing of these results, CNATRA took actions to increase the objectivity of the grading and evaluation system.

Discrimination

Many of the interview questions dealt with the issue of discrimination. The results indicated very little overt discrimination with agreement that subtle racial discrimination occurs especially after mistakes are made. It was found that some civilian simulator contractors treat women differently and a number of women perceive it as discrimination. Women also perceived the EO climate as better in aviation training commands than in Fleet squadrons.

Subtle racial and gender discrimination was perceived by many of those whom we interviewed. Some women mentioned that they heard the view expressed, particularly by Marines, and Marine instructors, that women shouldn't be flying military airplanes. This supports the results of a Roper Poll done in the early 1990s indicating that while 53 percent of active duty Navy personnel favored the assignment of women to direct combat positions, 78 percent of Marines surveyed were opposed (Department of the Navy, 1997).

The issue of problems with civilian simulator instructors has been noted in the past. It was mentioned by the head of PERS-61 in the early 1990s. He suggested, as others have, that there needs to be an anti-discrimination/anti-sexual harassment clause put into the simulator instructor contracts. These interviews suggest that some level of prevention of sexual harassment training should be required of them as well.

The interviews found that women feel more accepted in the helicopter pipeline, possibly because women have been piloting helicopters for a longer period of time. Also, there are more women in the helicopter community than in the other pipelines.

Reverse Discrimination

The findings for reverse discrimination can be summarized as: Many Whites have heard that women and minorities get into the flight program with lesser scores and are given more chances to fail. Also, many Whites believe that the rules are bent and standards are lowered to meet racial or gender quotas. Subjective grading is seen from two perspectives: Blacks think they are graded harder and some Whites think that minorities and women are graded easier. Some males express nervousness and "walking on eggshells" around women. Some instructors indicated that they were hesitant to "drop the hammer" on women for fear of being falsely accused of sexual harassment.

A view expressed by some White instructors and staff was that women and minorities may use discrimination as a crutch to hang their failures on. That is, they may attribute their lack of success to discrimination rather than blaming themselves for

the lack of performance. This view is that the system is fair and objective and decisions are made strictly on performance. Although it was unclear from this methodology how valid these claims are, what was striking was the difference in perceptions between these typically White instructors and staff, and minority, primarily Black students. While many of the Black students saw evidence of discrimination (whether subtle or structural), the other side was just as adamant about claiming that no problem at all existed in what was essentially a fair system.

There was also the view expressed that minorities, especially women, are treated easier. This feeling of preferential treatment has been previously noted. The aviation exit survey found negative comments about women being allowed to stay in the training program even after having received a number of downs that would usually result in attrition for men (Baisden, 1997).

It has been noted that some White instructors may view women and minorities as being let into the program to meet Navy goals or quotas and thus have lower expectations of their ability and performance (Heines, 1997). Comments on a recent administration of the aviation training exit survey indicated that some Blacks feel that White instructors have preconceived notions and negative expectancies about Black students' abilities and performance. It was felt that these preconceived notions negatively affected the instructors' ability to objectively grade them (Baisden, 1997). Even though we were unable to find any evidence supporting the claim that individuals are let in below standards to meet a racial/ethnic or gender goal, this belief was found to exist. A number of those interviewed indicated that they themselves had heard an instructor express this view or someone they knew had heard these views expressed. It would appear that these issues and perceptions should be addressed during flight instructor training given how influential instructors' expectations can be on student performance.

Tokenism

Because of small numbers, minorities and woman are noticed when present or absent. Many Blacks and women feel like they are under a microscope—when mistakes are made, they are seen as reflective of the entire group. Blacks and women are not part of the “clique,” they feel isolated and lonely due to low numbers, and not part of the “good old boys” club.

According to researchers such as Rosabeth Kanter, these feelings are part of a syndrome known as “tokenism.” Tokens are members of groups that are minorities in organizations (Jurik, 1985; Kanter, 1977). It was noted that when individuals make up small numbers in an organization, they may be faced with increased visibility, heightened stress, and viewed as representatives of their entire group. The Naval IG in the LT Carey Lohrenz case found that the intense media focus on the first women integrated into Fleet jet squadrons pressured the women into feeling that if they failed it would be reflective of the failure of all women (Department of the Navy, 1997).

The presence of tokens may increase conflict with majority group members, make the tokens the focus of excessive attention, and exaggerate stereotypes about the tokens' characteristics (Jurik, 1985). Thus, even in the absence of overt discrimination, being a

token can have negative effects on performance; “Just being a token can take its toll. It doesn’t have to be discrimination. Being the only one, being one of a few, is a burden because you feel you are being watched” (Samru Ekrut, Associate Director, Wellesley College Center for Research on Women, quoted in Heines, 1997, p. 15).

These effects of tokenism were reported by a number of the minorities and women interviewed. Many reported they felt as if they were under the microscope and that any error they made would be reflective of all Blacks or all women. For a number of women, the issue was heightened by the media focus on women in combat aviation, which served to shed additional unwanted attention on their performance. This seemed particularly true for women in the jet pipeline.

Mentoring

Getting the “gouge” (the informal information about how to succeed in the program) from others is a key to success. However, Blacks and women do not always fit into or use study groups as well as White students do. While most people have a personal advisor assigned to them, they are often not used. It is also difficult for some women to relate to male instructors. Bonding between students and instructors occurs for males but rarely for females. For many Blacks, NNOA serves an important function: passing key information. However, no similar program currently exists for women.

It has been suggested that one of the reasons that some minorities and women do poorly in aviation training is their tendency not to seek help and support from other students (Heines, 1997). This notion was supported by many of the interviews. Because of their low numbers and tendencies of individuals to group with others who are similar to them, it appears that many minorities and women are not part of study groups that get and share the “gouge.”

Jet Pipeline Environment and Culture

The interviews and focus group indicated a number of concerns specifically related to the strike or jet pipeline. The strike pipeline was seen as the embodiment of male culture. Some Blacks feel they are shunted towards helos even though they deserve jets or fixed wings. Women perceive helos as female-friendly and jets as anti-female. Some women avoid jets because they have heard that discrimination in the jet community is common. Finally, some women feel excluded from jet community social functions that often involve “heavy partying.” The Naval IG in the LT Carey Lohrenz case (Department of the Navy, 1997) documented the hostile environment faced by the women initially selected for integration into jet squadrons in the Fleet. The IG report recognized that the jet community conveys an image that can be seen as hostile to women: “The TACAIR (i.e., jets) community is a tightly knit organization whose history and mission fosters an image, in the minds of the public and many individual aviators, of the strong and courageous warrior, a clearly masculine image” (p. 6). Many of the women interviewed for this study expressed concern about the hostility they might experience in the jet community and some indicated that they chose other platforms such as helicopters because those communities were perceived as being more accepting of women. Blazar (1997) reports data that may support the negative perceptions of the jet community

expressed by women in this study. Of the 75 women who have entered the combat aviation pipeline since the original set, 32 percent have attrited. This compares to a 16 percent attrition rate for men. Heines (1997) similarly reported higher failure rates for Blacks and women in jet training compared to White men.

Culture Clash

A number of questions asked about reasons for high minority attrition from the flight program. Many of the answers pointed to the issue of “culture clash” faced especially by Blacks. Naval aviation is a “culture clash” for many Blacks. Also, there are few minority or women instructors to go to for advice and understanding of the Naval aviator culture. It is hard for some Black students to relate to White instructors or White students. Finally, Naval aviation training sites are located in the deep South where the social environment outside the command may be negative towards minorities. This may pose a particular problem for minorities from inner city urban areas.

Recommendations and Discussion

Whatever recommendations are made to make the system more inclusive, there was nearly universal agreement that standards cannot be lowered.

- Increase number of minority (Black) and women flight instructors in all pipelines
 - Ensure that being flight instructor is not a career buster

The need for more minority and women flight instructors is crucial. The November 1990 minutes of the Minority Flight Attrition/Recruiting Working Group recommended that there be at least one Black instructor at every aviation training squadron to serve as a role model. The need is still there. However, any attempt to increase the number of women and minority instructors will need to be coordinated with efforts to ensure that being a flight instructor is not a “career buster” for minorities and women.

- Consider formation of a section of NNOA for women in aviation training
 - Invite women aviators from the Fleet to talk to female aviation students about what aviation communities are like

As noted, NNOA serves a vital support function for many Black aviation students. A similar organizational structure is needed for women aviation students. Sponsorship of talks by women Fleet aviators would be an obvious activity for such an organization.

- Continue efforts to make the grading system more objective, including more specific grading criteria
 - Evaluate success of Whiting Field’s move toward use of Joint Primary Aircraft Training System with Air Force

There was general agreement, even among those who strongly favored the aviation training system as it existed, that, where possible, subjective evaluation needed to be gotten away from. Some of the reasons for grading had more to do with Navy tradition (“that’s the way we have always done it”) than for any other reason. In terms of making the grading system more objective, some of this is already happening (and continued in the years after this study was conducted). As the aviation training environment becomes more of a joint environment with the increased numbers from the Air Force, CNATRA is going to the Air Force grading system, which emphasizes grading towards a standard, and which a number of interviewees had noted was more objective. It appears that the move towards joint training will help towards making the grading system more objective—both in reality and hopefully in the perceptions of the students. A number of Air Force students interviewed did perceive the Air Force’s grading system as more objective than the Navy’s.

- Reinstitute the Minority Aviation Working Group
 - Expand mission to include women

As noted, the Minority Flight Attrition Recruiting Working Group was recently discontinued after its initiatives had gotten bogged down and high-level interest had waned. In its early days, however, with much Flag interest, sponsorship and representation, it seemed an effective vehicle to raise issues related to minorities in aviation and offer plans of action to address concerns. A review of the minutes of the working group indicates that many of the same issues raised in this study were noted previously. While the working group dealt with minority issues in aviation, any future revival should include issues relevant to women as well, given the increasingly high profile women’s issues have taken in the past several years.

- Highlight “success stories” to improve image of minority and women aviators
 - Put Public Affairs Office (PAO) focus on achievements of successful minority and women aviators
 - Do a better job of marketing Naval aviation to minorities and women

The challenge of bringing in more qualified minorities while maintaining standards was noted frequently in this study as it has been in the past (Miller, 1994). VADM Tracey’s DACOWITS briefing recommended that better recruiting of women and minorities with greater potential to complete the aviation training program was needed (Tracey, 1997). One reason this is so difficult is that the competition for highly qualified minorities is intense due to the Navy competing with other services and the private sector for the best qualified students (Braddock, et al., 1988). It has been suggested that the best quality minorities and women are more likely to accept corporate jobs while the Navy gets to choose among the best qualified White candidates who are not in such demand for corporate positions (Heines, 1997). This challenge was recognized in a July 24, 1997, address by the Chief of Naval Operations, ADM Jay L. Johnson, to the annual conference of the National Naval Officer Association meeting in Annapolis, MD. When

asked about diversity in the Navy, ADM Johnson replied, “My biggest concern is that the quality young men and women we are looking for to join the Navy are the very ones who are in the highest demand throughout society” (Navy News by E-mail, 1997).

To broaden the pool, one avenue that has been used in the past (e.g., Aviation Enlisted Commissioning Program), and seems a fruitful area for continued support, is the enlisted commissioning program where talented enlisted personnel are recruited for aviation commissioning programs. The third quarter FY97 Navy-wide demographics indicate that minorities are well-represented in aviation ratings at the enlisted level, with Blacks comprising 16.65 percent, Hispanics 9.30 percent, and Asian Pacific/Islanders (including Filipinos) at 5.21 percent.

Another thing Naval aviation will need to do is market itself better to minorities and women. Many of the minority students we interviewed had heard negative things about the Navy’s racial climate in general and Naval aviation in particular. Similarly, for women, the association of Tailhook with Naval aviation was still very real, as was the negative media focus on high visibility cases such as the LT Carey Lohrenz investigation (Blazar, 1997). Thus, to realistically attract more of the best and brightest among minorities and women, Naval aviation will have to do a better job of “imaging” or “reinventing” itself in these communities.

- Create a program for prior flight experience before API
 - Evaluate effectiveness on later performance in aviation training

While current views on affirmative action might require adapting the nature of these programs (open to all race and gender groups rather than just minorities), it certainly appears that revisiting the issue of pre-aviation training and remediation (and whether they are effective in reducing attrition) is warranted.

- Improve training of instructors in human-relations and communications skills
 - Develop and require additional diversity training for flight instructors

The diversity, sensitivity, or EO training of instructors clearly seems inadequate and needs to be strengthened. The current findings echo those noted by the Naval IG (Department of the Navy, 1987), the Minority Working Group, and the Johns Hopkins study that recommended that flight instructors should be made more aware of unintentional biases. Additionally, the Army recommended increased diversity training of its drill instructors following the incident at Aberdeen Proving Ground, MD, where drill sergeants were accused of sexually assaulting subordinates. Similar action is needed in Naval aviation training. In the mid-1980s, CNATRA developed a fairly detailed diversity module for its instructor training that dealt with many of the issues related to minorities in Naval aviation training. This was later replaced by a briefing given by the CNATRA aviation psychologist where the issues such as affirmative action, halo effects, etc. were dealt with. This was later replaced with a discussion by the Admiral in charge of CNATRA, who, while well-meaning, does not seem to be the best

choice for a frank discussion of the issues related to women and minorities in aviation training and how best to be fair to all while maintaining standards and objectivity. Something more in line with the Mobile Training Team of the Defense Equal Opportunity Institute in Patrick AFB, FL seems warranted for the Flight Instructor Training Course. This recommendation for increased diversity training is part of a larger need to dispel stereotypes that exist about the aviation training system including: the Navy has a quota system for women and minorities; women and minorities are let in with scores below the standard and are thus below average; minorities and women are treated easier—allowed more downs, and given more chances for remediation, etc.

- Require that others in joint service training environment adapt to Navy's views and policies regarding women in aviation
 - Require civilian simulator instructors to have EO/SH training
- Develop pre-aviation “survival skills” materials
 - Produce written materials about what is needed to survive
- Continue research on alternative selection methods that maintain predictive validity but are more inclusive
 - Test findings of CNA study indicating that changes to a number of ASTB composite scores used in selection would increase qualification rates for women and minorities while maintaining validity

The testing issue is one that is politically sensitive and highly controversial. As mentioned, the proponents of testing see it as a way of reducing attrition and lowering costs by accurately predicting who will succeed in aviation training. The opponents of testing see the tests as culturally biased, serving to exclude minorities and women who would make excellent Naval aviators if their true potential could be accurately measured. Reviews of the aviation test battery have found the revised selection screens to be valid predictors of success in the aviation training program. However, the reviews have found that minorities (especially Blacks) and women score lower on the selection tests. Thus, it is recommended that research continue on alternative selection devices some of which have been and continue to be researched. These include computerized versions of the ASTB—where items can be changed and revalidated and experimental items tested, alternative psychomotor tests and tests of personality, risk taking and motivation, automated cognitive and tracking tests, performance-based tests that simulate the actions of operational pilots (Blower & Dolgin, 1991), and other aspects of being a successful naval aviator that the tests currently do not measure (Dean, 1996; Griffin, 1988).

NAMRL is conducting a validation study comparing computer and paper versions of the ASTB. Aviation students are taking both versions of the screening tests which will be validated against their performance in primary flight training to see if the tests differ in their predictive validity (Biggerstaff, Blower, & Portman, 1996). A computerized selection test should provide additional flexibility over that of the paper version.

Research into alternative aviation selection tests, however, has found only limited success of tests of risk taking and personality in predicting success in aviation training even though studies indicate that motivational and personality factors are often a cause of attrition (Shull & Dolgin, 1989). Similarly, interviews with NAMRL staff indicated that prior work with psychomotor tests had indicated that they did not add much predictive validity to what was being obtained with the ASTB. This approach was endorsed by VADM Tracey in her April 1997 DACOWITS brief where she recommend looking at factors that contribute to success in Naval aviation training other than scores on the ASTB tests (Tracey, 1997). This would be in line with efforts by the other services and civilian airlines to look for additional selection methods beyond the currently used test batteries to better predict performance in aviation training.

Even though the ASTB has been shown to be a valid predictor of performance in Naval aviation training, there is a large portion of the variation in performance that it does not explain. Indeed, military aviation selection tests account for less than half the variation in success in aviation training, suggesting that there are likely other predictors of aviation training success that are not being assessed (North & Griffin, 1977). The challenge is to develop measures that explain and predict these additional aspects of performance in a reliable, valid, and cost-effective way (Dean, 1996).

Another possibility has to do with changing the selection composites (and the way they are weighted) required for admission to the program. Thus, it is strongly recommended that CNATRA consider implementing these CNA Study findings (described in Appendix D of the CNA report) towards the goal of qualifying more minorities and women.

References

- Baisden, A. G. (1980). *A Comparison of College Background, Pipeline Assignment, and Performance in Aviation Training for Black Student Naval Flight Officers and White Student Naval Flight Officers* (Special Report 80-2). Pensacola, FL: Naval Aerospace Medical Research Laboratory.
- Baisden, A. G. (1992). Gender and performance in Naval aviation training. *Proceedings of the 13th Symposium on Psychology in the Department of Defense*. Colorado Springs, CO.
- Baisden, A. G. (1997). *Exit Survey Report, 1 Oct 1996-31 Mar 1997*. Pensacola, FL: Naval Operational Medical Institute.
- Baisden, A. G. & Doll, R. E. (1978). *A Comparison of Black Student Performance and White Student Performance in Naval Aviation Training* (Special Report 78-7). Pensacola, FL: Naval Aerospace Medical Research Laboratory.
- Baisden, A. G., & Doll, R. E. (1979). *A Comparison of College Background, Pipeline Assignment, and Performance in Aviation Training for Black Student Naval Aviators and White Student Naval Aviators* (Special Report 80-1). Pensacola, FL: Naval Aerospace Medical Research Laboratory.
- Bennett, J. (1997, July 28). Student pilot's hopes take flight. *Navy Times*, P. 20.
- Biggerstaff, S., Blower, D. J., & Portman, L. A. (1996, November). *Equivalence of the Computer-Based Aviation Selection Test Battery (ASTB)*. Paper presented at the 38th Annual International Military Testing Association Conference, San Antonio, TX.
- Blazar, E. (1997, July 14). Wing of fate: What went wrong. *Navy times*, pp. 4, 6, 8.
- Blower, D. J., & Dolgin, D. L. (1991). *An Evaluation of Performance-Based Tests Designed to Improve Naval Aviation Selection* (NAMRL-1364). Pensacola, FL: Naval Aerospace Medical Research Laboratory.
- Braddock, J. H., Crain, R. L., Taylor, M. C., & Wu, S. C. (1988). *Enhancing Productivity in Naval Aviation Training in a Market of Changing Demographics: Final Report* (TR-ONR-1, #N00014-85-K-0780). Washington, DC: Office of Naval Research.
- Burke, W. (1995, April 10). *Minority Aviation Officer Study* (PERS-61 Point Paper). Washington, DC: Bureau of Naval Personnel.
- Chief of Naval Operations. (1984, October 31). *Final Report of the Minority Officer Accession Task Force*. Washington DC: Author.
- Dean, B. J. (1996). *Aviation Selection Testing: The Effect of Minimum Scores on Minorities* (Master's Thesis). Monterey, CA: Naval Postgraduate School.
- Department of the Navy. (1987, November). *Naval Inspector General Report of Investigation of Minority Attrition in the Aviation Training Pipelines* (Case No. 871157). Washington, DC: Author.

- Department of the Navy. (1997, February 10). *Naval Inspector General Report of Integration of Women into Carrier Air Wing Eleven* (Case No. 951297). Washington, DC: Author.
- Doll, R. E., & Baisden, A. G. (1979). *A Comparison of Black Civilian Procured Applicants and White Civilian Procured Applicants for Naval Aviation Training CY 1976–1978* (Special Report 79-3). Pensacola, FL: Naval Aerospace Medical Research Laboratory.
- Edwards, J. E., Thomas, M. D., Rosenfeld, P., & Booth-Kewley, S. (1997). *How to Conduct Organizational Surveys: A Step-by-Step Guide*. London: Sage Publications.
- Frank, L. H., & Baisden, A. G. (1993, Nov). The 1992 Navy and Marine Corps Aviation selection test battery development. *Proceedings of the 35th Annual Conference of Military Testing Association* (pp. 14-19). Williamsburg, VA.
- Griffin, R. (1988). *An Improved Automated Selection System for Navy Pilots* (NAMRL RIB 88-2). Pensacola, FL: Naval Aerospace Medical Laboratory.
- Helm, W. (1988, October 28). *CNATRA Initiatives to reduce minority student attrition*. Point paper. Corpus Christi, TX: Chief of Naval Aviation Training.
- Heines, V. (1997, March 10). Is Navy combat jet training fair to women and Blacks? *Navy Times*, pp. 12-15.
- Hiatt, C. M., Mayberry, P. W., & Sims, W. H. (1997). *Revalidation of the Aviation Selection Test Battery (ASTB)* (CAB 97-18). Alexandria, VA: Center for Naval Analyses.
- Jurik, N. C. (1985). An officer and a lady: Organizational barriers to women working as correctional officers in men's prisons. *Social Problems*, 32, 375-388.
- Kanter, R. M. (1977). *Men and Women in the Corporation*. New York: Harper & Row.
- Miller, S. A. (1994). *Perceptions of racial and gender bias in Naval Aviation flight training* (Master's Thesis). Monterey, CA: Naval Postgraduate School.
- Navy News by E-mail. (1997, July 30). "CNO challenges NNOA for future Navy."
- North, R. A., & Griffin, G. R. (1977). *Aviator Selection 1919-1977* (Special Report 77-2). Pensacola, FL: Naval Aerospace Medical Research Command.
- Petho, F. C. (1993). A history of naval aviation psychology during World War Two. *Proceedings of the 35th Annual Conference of Military Testing Association*, pp. 1-6. Williamsburg, VA.
- Shull, R. N., & Dolgin, D. L. (1989). Personality and flight training performance. *Proceedings of the Human Factors Society 33rd Annual Meeting*, Vol. 2, pp. 891-895.
- Street, D. R., Jr., Chaman, A., & Helton, K. T. (1993). The future of naval aviation selection: Broad spectrum computer-based testing. *Proceedings of the 35th Annual Conference of Military Testing Association* (p. 20–24). Williamsburg, VA.
- Thomas, M. D., & Thomas, P. J. (1997). *Nature of Gender Discrimination in the Navy* (NPRDC-TN-98-1). San Diego: Navy Personnel Research and Development Center.

Thomas, E., & Vistica, G. L. (1997, March 17). Falling out of the sky. *Newsweek*, pp. 26-28.

Tracey, P. A. (1997). *Retention for Women, Minorities and Female Minorities*. Washington, DC: Brief at DACOWITS.

Appendix A: Background Slides

Minorities and Women in Naval Aviation Training

A-1

**Paul Rosenfeld, Amy L. Culbertson, & Zannette A. Perry
Navy Personnel Research & Development Center**

**Briefing for VADM Oliver
Chief of Naval Personnel**

19 December 1997

Background

- Navy's 12/12/5 initiative set goal of 12% Black, 12% Hispanic, 5% Asian representation across all ranks, rates, and designators

A-2

- Representation of minorities is below 12/12/5 goals in aviation officer communities; representation of women in aviation is also low
- PERS-61 tasked NPRDC to study issues related to minorities/women in aviation training
 - ⇒ What barriers are faced by minorities and women?
 - ⇒ What organizational factors influence success of minorities and women in aviation training?

Study Approach

- Historical review of past research, investigations, and relevant documents
- Examination of recent studies and briefings
- Investigation of organizational factors through interviews and focus groups with those involved in Naval aviation training
- Synthesis of results into “Key Findings” and “Recommendations”

Historical Review

NAMRL Studies of Test Scores and Performance for Minorities

- Studies in late 1970s looked at Black-White student performance as a function of aviation selection test scores
- Blacks and Whites matched on aviation selection test scores and other variables (procurement source)
- Results indicated no Black-White differences in attrition from flight program for matched samples

Minority Flight Attrition/Recruiting Working Group Minutes

- Initial meeting in 1987; name later changed to Minority Aviation Officer Working Group; meetings recently discontinued
- BUPERS-sponsored; met every six months to look at issues impacting minorities in aviation, to monitor progress in meeting Navy goals, and to decrease minority attrition
- Review of minutes indicates many issues originally raised in 1987 remained through mid-1990s
 - ⇒ Difficulties in attracting qualified minorities to flight program
 - ⇒ High minority attrition from aviation training program
 - ⇒ Concerns about fairness of aviation selection test battery
 - ⇒ Concerns about subjective grading by flight instructors

Navy IG of Minority Attrition in Naval Aviation Training

- Navy IG (1987) looked at issues related to minority attrition from aviation training
- Found that Black pilots and naval flight officers (NFOs) had higher attrition rates than Whites did
- Recognized need for preparatory and remedial programs to assist Black pilot and NFO candidates
- Recommendations led to minority-based initiatives for aviation training and establishing of goals for Black pilots and NFOs

Johns Hopkins Study

- Conducted major evaluation of racial issues in Naval aviation in mid-1980s after questions raised by Tuskegee Airmen
- Over 900 surveys and 200 interviews of aviation training students, staff, and operational personnel on issues related to minorities in flight program
- Results found many minority aviation students felt they were victims of racial discrimination
- Almost none of the White students or instructors indicated awareness of any racial bias

Examination of Recent Studies and Briefings

BUPERS Brief on Minorities and Women in Naval Aviation

- BUPERS (432) brief, Sept. 1996, “Status of Minorities and Women in Naval Aviation”
- Presented review of Naval aviation racial and gender distributions between 1992-1996
- Representation of minorities and women in Naval aviation community ranged from 2-3%
- Higher attrition rates found for minority and women pilots and NFOs from Naval aviation training command pipelines

FY92 - FY96 Attrition Rates for Navy Flight Training

A-11

	Primary	Intermediate	Advanced
White Male	8.4%	1.5%	2.6%
Black Male	13.8%	5.1%	7.1%
Hispanic Male	12.1%	1.6%	7.7%
Other Male	8.4%	2.6%	3.0%
<hr/>			
All Males	8.8%	1.7%	2.9%
All Females	10.5%	2.9%	4.1%
<hr/>			

Note: No statistically significant differences between the groups were obtained.

1997 CNA Study: Revalidation of Aviation Selection Test Battery (ASTB)

- First comprehensive study of revised selection test battery (1992) using Navy and Marine Corps data
- ASTB composed of series of tests; raw scores weighted into three composites
 - ⇒ AQR composite: Measures math and verbal skills
 - ⇒ FAR/PFAR composites: Measure mechanical and visual spatial abilities for pilots and NFOs
 - ⇒ PBI/FOBI: Biographical inventory for pilots/NFOs
- ASTB found to be valid and unbiased selection device for aviation program although it has adverse impact on minorities and women
 - ⇒ Appendix D indicated that changes in ASTB selection composites might increase qualification rates for women and minorities while maintaining validity

VADM Tracey's DACOWITS Brief

- Briefed DACOWITS in April 1997 on flight training and retention for women and minorities
- Found aviation selection test battery to equally predict training performance and attrition for all racial/ethnic and gender groups
 - ⇒ Higher attrition rates of minorities/women due to differences in ASTB scores
- Better recruiting of minorities and women to the aviation training program needed
- Recommended evaluating impact of preparatory programs on performance in initial phases of flight training
- Recommended investigating factors other than ASTB test scores that contribute to success in aviation training

Investigation of Organizational Factors

Analysis of the Navy Equal Opportunity/Sexual Harassment (NEOSH) Survey

- Navy-wide survey administered to stratified random sample in 1995-1996
- Survey data analyzed to compare perceptions of racial/ethnic and gender discrimination

1996 NEOSH Survey

Racial/Ethnic Discrimination Behaviors Experienced During Past 12 Months

Percent “Yes”

	<u>White Officers</u>		<u>Black Officers</u>	
	Aviation	Rest of Navy	Aviation	Rest of Navy
Negative Comments	4%	6%	26%	22%
Offensive jokes	0%	5%	25%	17%
Ignored by others	2%	5%	33%	19%
Given menial jobs	2%	2%	15%	8%
Not asked to socialize	2%	3%	17%	10%
Denied potential reward/benefit	0%	3%	15%	7%
Physically threatened	0%	1%	6%	2%
Physically assaulted	0%	0%	0%	0%

1996 NEOSH Survey

Gender Discrimination Behaviors Experienced During Past 12 Months

Percent “Yes”

	<u>Male Officers</u>		<u>Female Officers</u>	
	Aviation	Rest of Navy	Aviation	Rest of Navy
Negative Comments	1%	5%	63%	31%*
Offensive jokes	1%	3%	39%	23%
Ignored by others	1%	3%	39%	20%*
Given menial jobs	0%	2%	28%	9%*
Not asked to socialize	0%	4%	37%	15%*
Denied potential reward/benefit	0%	2%	4%	5%
Physically threatened	0%	1%	3%	3%
Physically assaulted	0%	0%	4%	1%

Investigation of Organizational Factors

Interviews and Focus Groups

- Interview data collected at the following aviation training sites:
 - ⇒ NAS Kingsville
 - ⇒ NAS Corpus Christi
 - ⇒ NAS Pensacola
 - ⇒ NAS Whiting Field
 - ⇒ NAS Meridian
- Structured interviews with students, instructors, staff, and subject matter experts at aviation training commands and at CNET, NAMRL, and BUPERS

Key Finding: Positive Perceptions of Quality of Aviation Training

- Most interviewed think it's a great program, even those who attrited
- Many women and minorities view Naval aviation as a good institution that has some biased individuals
- Widespread acceptance that program is a success may cause resistance to any suggested changes

Key Finding: Swimming Requirement No Longer an Obstacle

- Historical analysis indicated swimming was frequent barrier for Blacks
- Current interviews found swimming no longer is an obstacle
- Changes made to swimming training appear to have been successful

Key Finding: Lack of Prior Exposure to Aviation

- Prior flight experience is viewed as important, especially in jet pipeline
- Many minorities and women lack prior exposure to aviation or prior flight training – already at a disadvantage when entering program
- Many Whites have wanted to be aviators their whole lives and have “corporate knowledge”

Key Finding: Instructors

- Some instructors feel that minorities/women are there due to quotas and are less qualified - may lead to differential treatment
- The lack of minority and women instructors provides few role models for both students and other instructors
- Instructors said to lack sensitivity to cultural diversity
- Instructors are not as approachable for minorities and women

Key Finding: Grading

- Perceptions of subjectivity in grading is major complaint of Blacks, especially in Primary flight training
- Black students feel they are evaluated while Whites are taught
- For borderline flights, Blacks feel they are not given benefit of doubt and mistakes get compounded, so they fly scared
- Blacks not permitted slip-ups; Whites often get a second chance
- Air Force grading is seen as more objective and standardized

Key Finding: Discrimination

- Very little overt discrimination - agreement that subtle racial discrimination occurs
- Civilian simulator contractors treat women differently – some women perceive it as discrimination
- Negative comments about women expressed by some Marines
- Women perceive EO climate as better in aviation training commands than in Fleet squadrons

Key Finding: Reverse Discrimination

- Many Whites have heard that women and minorities get into flight program with lesser scores and are given more chances to fail
- Many Whites believe that the rules are bent and standards are lowered to meet racial or gender quotas
- Subjective grading seen from two perspectives: Blacks think they are graded harder and some Whites think that minorities and women are graded easier
- Some males express nervousness and “walking on eggshells” around women
- Some instructors hesitant to “drop the hammer” on women

Key Finding: Tokenism

- Because of small numbers, minorities and woman are noticed when present or absent
- Many Blacks and women feel like they are under a microscope – when mistakes are made, seen as reflective of entire group
- Blacks and women not part of “clique” – feel isolated and lonely due to low numbers, not part of “good old boys” club

Key Finding: Mentoring

- Getting the gouge from others is a key to success -- Blacks and women don't always fit into or use study groups as well as White students do
- Most people have a personal advisor assigned but often not used
- Difficult for some women to relate to male instructors -- bonding between students and instructors occurs for males but rarely for females
- For many Blacks, NNOA serves important function: passing key information -- no similar program currently exists for women

Key Finding: Strike/Jet Pipeline Environment and Culture

- Strike pipeline seen as embodiment of male culture
- Some Blacks feel they are shunted towards helos even though they deserve jets or fixed wings
- Women perceive helos as female-friendly and jets as anti-female
- Some women avoid jets because they have heard that discrimination in jet community is common
- Some women feel excluded from jet community social functions that often involve “heavy partying”

Key Finding: Culture Clash

- Naval aviation training sites located in deep South where social environment outside command may be negative towards minorities
- Naval aviation is “culture clash” for many Blacks

Recommendations

- Create program for prior flight experience before API
Evaluate effectiveness on later performance in aviation training
- Develop pre-aviation “survival skills” materials
⇒ Produce written materials about what is needed to survive
- Increase number of minority (Black) and women flight instructors in all pipelines
⇒ Ensure that being flight instructor is not a career buster
- Improve training of instructors in human-relations and communications skills
⇒ Develop and require additional diversity training for flight instructors

Recommendations (continued)

- Continue efforts to make grading system more objective including more specific grading criteria
 - ⇒ Evaluate success of Whiting Field's move toward use of Joint Primary Aircraft Training System with the Air Force
- Require that others in joint service training environment adapt to Navy's views and policies regarding women in aviation
 - ⇒ Require civilian simulator instructors to have EO/SH training
- Continue research on alternative selection methods that maintain predictive validity but are more inclusive
 - ⇒ Test findings of CNA study indicating that changes to number of ASTB composite scores used in selection would increase qualification rates for women and minorities while maintaining validity

Recommendations (continued)

- Reinstitute the Minority Aviation Working Group
 - ⇒ Expand mission to include women
- Consider formation of section of NNOA for women in aviation training
 - ⇒ Invite women aviators from the Fleet to talk to students about what aviation communities are like
- Highlight “success stories” to improve image of minority and women aviators
 - ⇒ Put PAO focus on achievements of successful minority and women aviators
 - ⇒ Do a better job of marketing Naval aviation to minorities and women

Appendix B:

Aviation Study Interview Protocol

Date _____, Time _____
Location _____

AVIATION STUDY: INTERVIEW PROTOCOL

INTRODUCTION

WE ARE RESEARCHERS FROM THE NAVY PERSONNEL RESEARCH AND DEVELOPMENT CENTER IN SAN DIEGO. WE HAVE BEEN TASKED BY THE BUREAU OF NAVAL PERSONNEL TO LOOK AT ISSUES RELATED TO NAVAL AVIATION TRAINING. WE ARE TALKING TO A NUMBER OF PEOPLE IN BOTH TRAINING AND OPERATIONAL SETTINGS ABOUT THEIR OWN EXPERIENCES DURING AND SUBSEQUENT TO TRAINING TO LEARN WHAT IDEAS THEY MAY HAVE ABOUT HOW TO INCREASE TRAINING PRODUCTIVITY, EFFICIENCY, AND RETENTION.

IN PARTICULAR, WE ARE INTERESTED IN BARRIERS THAT MAY BE FACED BY MINORITY GROUPS AND WOMEN. YOUR RESPONSES TO THESE QUESTIONS ARE FOR RESEARCH PURPOSES ONLY AND WILL IN NO WAY AFFECT YOUR TRAINING EXPERIENCES OR YOUR NAVY CAREER. YOUR INDIVIDUAL RESPONSES ARE STRICTLY CONFIDENTIAL, AND WILL NOT BE LINKED TO YOU PERSONALLY IN ANY WAY. UNDER NO CIRCUMSTANCES WILL YOUR INDIVIDUAL RESPONSES BE MADE AVAILABLE TO ANYONE IN YOUR CHAIN OF COMMAND

BACKGROUND

FIRST WE WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT WHO YOU ARE, WHERE YOU WENT TO SCHOOL, ETC.

What is your current rank.

NOTE RACE/ETHNIC STATUS AND GENDER (ASK IF UNSURE)

What college did you graduate from?

Approximately where did you rank in your undergraduate class? (upper 5%, upper 10%, upper 25, upper 50, lower 50%)

What was your undergraduate major field?

Did you have civilian flight experience prior to entering Naval aviation?

What type aircraft did you fly before entering the Navy?

How many flight hours did you have before entering the Navy?

When did you first develop a serious interest in joining the Navy?

When did you first develop a serious interest in becoming an aviator?

What are your career goals as an aviator?

SWIM PROFILE

Did you or do you have problems completing the Navy's aviation swim requirements?

Did you participate in any swim programs during high school?

How often did you swim during your high school years?

How often did you swim during college years?

TRAINING

What aviation program are you currently in?

Of the following, which aspect of aviation training has given you the most difficulty? (READ ALL ALOUD)

physical demands

academic subject matter
military discipline
psychological stress
cockpit performance
swimming requirements
other _____

Which aspect of aviation training have you found the least difficult (READ ALL ALOUD)

physical demands
academic subject matter
military discipline
psychological stress
cockpit performance
swimming requirements
other _____

What parts of the training process need improvement? Why? How should they be modified?

When you arrived here did you have a clear idea what training would be like? If not, what was different than you expected?

Would you agree or disagree with the following statement, "The information I received from my Naval advisors provided me with a clear sense of what to expect at the Aviation training school"?

INSTRUCTORS/STAFF

Would you agree or disagree that you have encountered instructors or staff who feel that minorities or women were there due to quotas and were below average in capability?

Would you agree or disagree that you have encountered a confrontational atmosphere with instructors? Have your instructors generally made you feel welcome?

EO/SH TRAINING

Have you received prevention of sexual harassment training during the past year (12 months)

Have you received equal opportunity or diversity training during the past year (12 months)

Would you say that the equal opportunity climate here is good, bad or neither?

CAREER ISSUES/MENTOR

Do you currently have a mentor or advisor?

Has any officer senior to you taken you under his/her wing, providing advice, guidance, recommendations, gouge?

DISCRIMINATION

PAST RESEARCH HAS SHOWN THAT SOME STUDENTS FEEL THAT THEY HAVE EXPERIENCED DISCRIMINATION DUE TO THEIR RACIAL/ETHNIC OR GENDER STATUS WHILE IN AVIATION TRAINING. WE REALIZE THAT THIS IS A SENSITIVE ISSUE AND WE APPRECIATE YOUR HONEST RESPONSES AND DO NOT WISH TO SKEW YOUR RESPONSES ONE WAY OR THE OTHER.

Would you agree or disagree that:

Personnel here have a basic awareness of minority issues?

Minority flight students do not receive the same breaks as their majority peers?

Female flight students do not receive the same breaks as their male peers?

Do you feel you experienced discrimination due to your race/ethnic group during flight training?

Do you feel you experienced discrimination due to your gender during flight training?
 You given the same opportunities to succeed in your command as others are?
 Many White instructors resent minorities and women and feel they are only there because of quotas?
 Do you think that minorities experience tougher grading in flight training than Whites do, easier grading or about the same?
 Do you think that that women experience tougher grading in flight training than men do, easier grading or about the same?
 Would you agree or disagree that racial bias exists in Naval Aviation flight training?
 Would you agree or disagree that gender bias does exist in Naval Aviation flight training?
 Are you given the same opportunities to succeed in your command as your non-minority peer?
 Would you agree or disagree that there is resentment of minorities in Naval Aviation?
 Would you agree or disagree that there is resentment of females in Naval Aviation?
 Would you agree or disagree that the Naval Aviation training command works hard to ensure that everyone gets the same opportunity?
 Would you agree or disagree that your instructors are usually quite fair to you?
 Would you agree or disagree that senior officers have low expectations of minorities and women in Naval aviation training??

REVERSE DISCRIMINATION

PAST WORK HAS SHOWN THAT SOME PEOPLE FEEL THAT TOO MUCH ATTENTION IS PAID TO MINORITY AND WOMEN'S ISSUES IN NAVAL AVIATION TRAINING. WE'D LIKE TO ASK YOU SOME QUESTIONS ABOUT THIS.

Do you agree or disagree that standards are lowered to fill quotas with women and minorities?
 Do you agree or disagree that women are treated easier because of quotas?
 Do you agree or disagree that marginal minorities and women receive their wings but marginal Whites do not?
 Do you agree or disagree that minorities are given more chances to fail"?
 Do you agree or disagree that preferential treatment is received by minorities and women for certain platforms, especially jets?
 Do you agree or disagree that women are graded easier and or receive more downs before being attrited?
 In general, do you agree or disagree that a double standard exists where women and minorities are receiving more opportunities to succeed in flight training than Whites do?

OPEN-ENDED QUESTIONS

FINALLY WE'D LIKE TO ASK YOU TO RESPOND TO SOME OPEN-ENDED QUESTIONS

Has being a minority (women) aviation officer created any special burdens for you in training? What were they? How did you deal with them?
 Is there a stereotype of a naval aviator? What is it? Does it not 'fit' minority (women) aviation candidates?
 Why do you think minority aviation candidates attrite at a higher than average rate? Do you have any suggestions for reducing this attrition?
 Do you have any suggestions for improving Naval Air training? If yes, what are they?

Distribution

AIR UNIVERSITY LIBRARY
ARMY RESEARCH INSTITUTE LIBRARY
ARMY WAR COLLEGE LIBRARY
CENTER FOR NAVAL ANALYSES LIBRARY
CHIEF OF NAVAL PERSONNEL (N134)
HUMAN RESOURCES DIRECTORATE TECHNICAL LIBRARY
JOINT FORCES STAFF COLLEGE LIBRARY
MARINE CORPS UNIVERSITY LIBRARIES
NATIONAL DEFENSE UNIVERSITY LIBRARY
NAVAL HEALTH RESEARCH CENTER
NAVAL POSTGRADUATE SCHOOL DUDLEY KNOX LIBRARY
NAVAL RESEARCH LABORATORY RUTH HOOKER RESEARCH LIBRARY
NAVAL WAR COLLEGE LIBRARY
NAVY PERSONNEL RESEARCH, STUDIES, AND TECHNOLOGY SPISHOCK
LIBRARY (3)
OFFICE OF NAVAL RESEARCH (CODE 34)
PENTAGON LIBRARY
USAF ACADEMY LIBRARY
US COAST GUARD ACADEMY LIBRARY
US MERCHANT MARINE ACADEMY BLAND LIBRARY
US MILITARY ACADEMY AT WEST POINT LIBRARY
US NAVAL ACADEMY NIMITZ LIBRARY